D 42511 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, JUNE 2018

(CUCSS)

Chemistry

CH 4C 12—INSTRUMENTAL METHODS OF ANALYSIS

(2015 Admissions)

Time : Three Hours Maximum : 36 Weightage

Section A

Answer **all** *questions.*
Each question carries a weightage of 1.

1. Define the terms 'mean deviation' and 'relative mean deviation'.
2. What is the difference between constant error and proportionate error ?
3. What is meant by 'aging of precipitate' ? Explain.
4. What is a metallochrome indicator ? Give an example.
5. How IR spectrum is calibrated ?
6. If the absorbance value of potassium chromate solution is 0.762, calculate the percentage of radiation absorbed by it.
7. What are chemical interferences in AAS ?
8. What do you mean by X-ray powder diffraction pattern ? Explain.
9. What is the principle of AFM ?
10. Discuss the parameters that affect DSC curves.
11. What do you mean by capacity of an ion-exchange resin ?
12. What is the principle of TLC ?

(12 × 1 = 12 weightage)

Section B

Answer any **eight** *questions.*
Each question carries a weightage of 2.

13. A sample of water on analysis showed the following sets of concentrations of dissolved iron (ppm): 21.2, 21.4, 21.1, 21.4 and 21.8. Calculate the average deviation from mean, standard deviation, relative standard deviation and co-efficient of variation.
14. Give an account of the classification of errors.

Turn over

15. Differentiate between co-precipitation and post precipitation, with suitable examples.
16. Write a note on titrations In non-aqueous media.
17. Give a brief account of the different types of indicator electrodes used in potentiometry.
18. What do you mean by biamperometry ?
19. Write briefly on coulometric titrations.
20. Describe the principle of chronopotentiometry.
21. What is the theory of SEM analysis ?
22. Comment on the complementary nature of TG and DTA.
23. Discuss the principle of neutron activation analysis.
24. Briefly discuss the application of isotope dilution method.

(8 × 2 = 16 weightage)

Section C

Answer any **two** *questions.*
Each question carries a weightage of **4.**

25. Discuss the principle and instrumentation of polarography. How this technique its useful in quantitative analysis ?
26. Explain the principle, instrumentation and applications of a double beam uv-visible spectrophotometer. What is meant by the term 'signal to noise ratio' in a spectrophotometer ?
27. Discuss the theory, instrumentation and applications of ESCA.
28. Describe the instrumentation of GC with the help of block diagram. Comment on the different types of detectors used in GC Mentions the important applications of GC.

(2 × 4 = 8 weightage)